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REPORT
OF A COMMITTEE APPOINTED BY THE
ACADEMY OF MEDICINE,
UPON THE
COMPARATIVE VALUE OF MILK,
FORMED FROM THE
SLOP OF DISTILLERIES AND OTHER FOOD,

WITH CHEMICAL AND MICROSCOPICAL ANALYSES.

BY AUGUSTUS K. GARDNER, M.D.,
CHAIRMAN.

15
READ MARCH 1, 1848.

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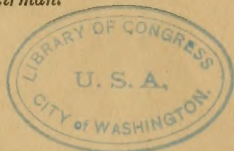
UPON THE

FORMED FROM

THE SLOP OF DISTILLERIES AND OTHER FOOD.

BY AUGUSTUS K. GARDNER, M. D., *Chairman.*

READ MARCH 1, 1848.



Resolved, That a committee of eleven be appointed by the Academy, to examine into the effects, proximate and remote, upon the general health of the city, caused by the numerous distilleries, gas works, slaughter houses, milk establishments, lead manufactories, tanneries, and all other manufactories and establishments which are, or may be styled nuisances, from their deleterious effects upon the health; and particularly to report the effect upon the human economy of milk taken from kine, tuberculously or otherwise diseased, from improper food, or confinement in these milk establishments :

have, in commencing their labors, attended to that part of their duties laid down in the following extract from the resolution, "And particularly to report the effect upon the human economy of milk taken from kine, tuberculously or otherwise diseased, from improper food, or confinement in these milk establishments."

In investigating this matter, your committee have not forgotten the importance of careful attention, accurate and repeated examinations, unswayed by any bias. The importance of such an investigation, of an article which constitutes so large a portion of the food of the inhabitants of this city, is evident to all. In 1842, it was estimated that the quantity of milk, daily used in the city of New York, amounted to more than 15,000 gallons, at that time principally furnished from the neighborhood. With the growth of the city, the consumption of milk has undoubtedly increased. The immediate vicinity is no longer competent to furnish the quantity demanded, and it now comes to us from long distances, brought hither by the agency of the great motor principle of the age—steam. The various kinds of milk which are consumed in the city may, therefore, be divided into several classes, according to its origin.

1st. The grass-fed milk, brought from a distance by steam—as the Orange County milk, for example.

2d. That produced by feeding the cows entirely, or partially, with distillery slop—which is the refuse of the grain, left after distillation, mixed with water, with most or all of the spirituous ingredients extracted, brought hither by steam—as for example the Newburg.

3d. Grass-fed milk produced in the neighborhood of the city, as some of the Bloomingdale dairy milk.

4th. That produced partially by the administration of distillery slop in the neighborhood, as at Brooklyn, Wallabout, Bloomingdale, &c.

5th. That produced in the city, or on its outskirts, solely by feeding on distillery slop—as at the distilleries on Long Island, Sixteenth and Forty-Second Streets in this city.

No. 1, is from cows as nearly as possible in a state of nature, nourished by natural food, and unconfined, having that exercise and pure air so necessary for health.

No. 2, is from cows that are in some respects fed and kept like the former, but whose secretive organs are stimulated to unnatural action by distillery slops, or the grains from breweries, and whose winter nourishment is said to consist principally of this food.

No. 3, is like number one, except that it is brought to market by milk carts.

No. 4, is similar to No. 2, with the same reservation as before.

No. 5, is from cows kept in, or near the city, constantly confined in stables, and fed entirely, or nearly so, on distillery slop. These cows are kept in low sheds, sometimes at a distance from, but generally near a distillery. A description as summary as possible of the cow-sheds attached to Johnson's distillery, corner of Sixteenth Street and Tenth Avenue, will, perhaps, give as good an idea of this method as can be stated in any manner. This collection of pens is selected for description, on account of its size and neatness, being far superior to any of the others in both these particulars.

The lofty chimneys of the distillery, constantly vomiting forth its black and sulphurous smoke, will guide your steps thither. Should the wind blow towards you, the olfactory organs will, while yet at a distance, aid your researches. It extends from street to street, and between it and the Tenth Avenue, are the cow-sheds. Cross the avenue, and the whole block, to the very edge of the water, is filled with continuous rows of sheds, separated from one another by paved roads, where stand the milk carts and the cans. Enter them, and internally these sheds are sub-divided into apartments sufficiently large to accommodate two rows, of twelve cows each, standing tail to tail. They are slightly raised from the level of the floor, by an inclined plane, and are tied by cords, or leather straps which pass around the neck. Here they stand by day and sleep by night, without bedding, upon the wet floors. Between the rows is a narrow space, so inclined that the urine, &c., will flow off easily. Running by their heads is a long trough to contain the slops, or swill, as it is sometimes called. Without the building, at proper intervals, are tanks containing the "slop" brought down from the distillery, through conduits, running under the street, and so constructed that by removing a plug, it will flow into the troughs immediately before the cattle,—thus saving the great labor of transportation, necessary when the stables are not contiguous to the distillery.

It is not easy to compute the number of cows kept here, but the lowest estimate is two thousand, the highest four thousand. They commence their city life in the spring, when the stock is almost entirely renewed, those of last year being fattened and carried to the shambles. They come from the country soon after calving, and are immediately tied up in these stalls. The calf is soon killed. For nutriment they are offered this slop, which they not unfrequently refuse to drink for a day or two. Starvation is their only alternative. It is, indeed, rather offensive with its peculiar, half sour, half spirituous odor, as it comes bubbling, foaming, and steaming, from the tanks.

The heat of this liquor is so great that not unfrequently it is served to them when it would scald the finger placed in it. The cattle nearest to the tank, even when inured to it, draw back from the heat of the fumes; the next, excited by appetite, carefully lap it with the ends of their tongues, hardened by frequent exposures of this kind; while those further along are enabled to drink it as it comes cooled by the passage.

As the toper or the habitual user of tobacco is wedded to his deleterious practices, so is the poor cow to this "slop." She soon learns to like it, and awaits the time for its distribution with manifest anxiety. She drinks herself full. Soon after she is given her pittance of hay, oil-cake, or bran. This is not customary in all establishments. Nature requires a certain quantity of bulk, and she eats a little, but with slight relish. From the day of her entrance into this Bastille, she is not allowed a single draught of pure water. She soon lies down, or mayhap remains standing in a very stupid state. This may be from repletion, but more probably from a small quantity of alcohol remaining in the "slop," for she seems drunken. When she lies down, it is not in the easy position of the cow in the pasture, with her feet folded under her. She is rather lying on her side, with outstretched neck and feet, resembling the uncomfortable position in which the besotted drunkard throws himself.

The eye so meek and gentle that Homer dignified the queen of the gods by the epithet *βουπις*, or the "ox-eyed," has here a staring, stupid gaze, though immediately before

feeding, the excitement renders it preternaturally brilliant. They seem to suffer but little, for the constant stupor which overshadows them, apparently dissipates all feeling. They make no attempt at resistance, braving calmly whatever is inflicted upon them, scarcely rising by kicks and blows; and the cow formerly fractious and unruly, may here be taken by the nose, and the mouth opened without manifest objection—things almost impossible in a common stable. These cows are attended with much care, frequently curried, the stables kept as clean as possible generally. At other establishments, as in one near Forty-Second Street, the cows are neglected and the stables shockingly filthy—truly Augean stables, the scent of which is perceptible to a very great distance.

A few days after their arrival, disease not unfrequently attacks them, and often with such virulence that it is not uncommon for the animal, which cost \$40, to be dead at the expiration of a fortnight after her entrance, benefiting her owner but little more than the value of her skin.

One of the most common and early appearing diseases, is what is called by the cowherds "sore-foot." What the disease is your committee cannot state. The symptoms and pathological condition are as follow.

After a longer or shorter residence in these stables, the first symptom noticed, is the tenderness of one or more feet, most commonly (as we gather from the keepers) the front-feet. This tenderness goes on increasing, accompanied by a swelling, which is generally local, situated around the hoof, but occasionally spreading up the leg. Sometimes but one foot is attacked—by foot we refer not to the foot as commonly designated, but rather to the anatomical division—more generally two, and sometimes all four. The pain soon becomes great, and the animal is no longer able to bear the weight of her body upon them. After this, she rises, if at all, with great reluctance.

But little curative means are used. While all confess the efficacy of pasturage as a cure, it is rarely tried, for the disease, as a general thing, must be endured by every animal, sooner or later, before they become acclimated. Cold water is sometimes used both as preventive and remedy. This is

administered by filling the narrow passage between the rows of cows with water, and by drawing back they are enabled to stand with their hinder feet in it. Heat is generally considered to be the cause of the complaint, and when sick they are occasionally allowed to go out and breathe the fresh air. If the attack is slight, they are fed and milked as usual. If more severe, they are fed with bran, hay, &c., and the milking continued as ever. Some owners say that they throw away the milk from cows thus diseased, it being drawn only that the secretion may not be arrested. Others allow that they are less scrupulous; some even confessing that those thus affected give far more, and better milk than when well.

In several cases, which your committee have examined, there was found after death, a fungus growing out between the hoofs; several external orifices discharged a fetid pus; while within, the bones were carious, the ligaments ulcerated, and the whole limb quite disorganized. Your committee in some instances have seen pus in the cellular tissue, extending up the foot.

A peculiar disease, not found when the animal is kept in a healthy situation and fed with natural food, is a caries or absorption of the teeth. This is found most generally in the mouths of animals that have been kept in the stable for six months. They seem to be absorbed, appearing very much as one would suppose they might, had they been exposed to the effect of a strong acid. The general appearance is as if the crown of the teeth had been entirely decayed, leaving a yellow, irregular stump or fang, less in size than the natural, as if that, too, had been partially absorbed. This fang is loose, moving easily under the finger, and in not a very long time falls out. There is little or no active inflammation around the teeth of the animals while alive, and apparently little pain, as they eat hay with them, though necessarily slowly. After death the alveolar processes are often found entirely absorbed. The maxillary glands are not generally enlarged.

The reasons given by those engaged about the cows for this peculiar disease, are quite various. Some ascribe it to age. This is obviously incorrect, as the disease is seen in young cows equally with the old. Some give the extreme heat of

the "slop" as the cause, while others suppose the origin to be either the transitions from heat to cold, or the characteristic principles of the food. The probability is that all these three latter are essential agents in producing this disease. This opinion will be apparent from the following result of their observations. The disease appears to be mainly confined to those teeth most exposed to the heat—the front teeth—while the grinders equally exposed to the chemical causes remain quite sound, when the incisors are completely destroyed. It is stated that the teeth of those animals which are kept at a distance from the distillery, and where the food is necessarily cooled in its transportation, are less affected. These views, however, remain to be verified by future observations. True it is that from some cause or other, the teeth of cattle, thus situated and fed, are prematurely lost. It may be from this circumstance, that the horses employed in carrying out the milk, though kept in the same stables, are never fed upon this food, called so nutritious.

Another peculiarity is the "elongated hoof." This has been considered a disease, but in the opinion of your committee it is merely an elongation of the hoof from natural causes. This part of the animal, like every other, has a growth proportionate to its wants. In a natural state, the beast is walking and running about during the whole day, frequently upon rough and stony roads. This exercise wears down the hoof to the proper length; but confined in the stable for months, the growth continues without the wear which would reduce it to the ordinary dimensions. It is for this simple reason that the hoofs of these animals are sometimes seen 8 or 10 inches in length, and preventing the animal from standing with ease. A similar occurrence is not unfrequently seen in caged birds, requiring, as with the cows, amputation. As well might the elongated finger-nails of the Chinese nobility be called diseased, for they are not unfrequently several inches in length, and kept in gold cases to protect them from being broken. Any work must destroy them, and it is only as an evidence of a life of ease that they are prized.

Besides these minor evils, there are others of greater magnitude. Not unfrequently the death of these cows is extremely

sudden. We have been informed by a dealer, that he has known a cow, apparently in good health, die while she was being milked, crushing in the fall the dairyman under her, and so confining him, that he could not rise without aid. What was the complaint, he knew not.

Various other diseases affect them, some of which perhaps are not more frequent than among the same number elsewhere. In these establishments, however, they are regularly milked, notwithstanding their malady. We have seen at the stables in 16th street, one affected with hernia, another with a large fluctuating abscess on the buttock, apparently of sufficient size to contain a gallon of fluid. The teat of one that was accidentally cut was milked while the healing process was going on. Dr. Cock, jr., says that he has seen the genuine vaccine disease among them. Serious injuries from bruises, &c., are not of unfrequent occurrence.

During the months of August, September, and October, 1847, an epidemic prevailed to a very fearful extent, in the pens of the distilleries, more than decimating their numbers. The first evidence of its attack, was the diminution of milk, decreasing a half in twelve hours. Its progress was then fearfully rapid; twenty-four hours frequently witnessed the approach of the disease and the death of the animal.

The treatment was various, and with equal success. Blood-letting and purging, which the symptoms and the pathology of the disease indicated, were useless, for few if any had the constitution to stand against it. Equally so were blistering and rowelling. Conscious that their confined state is an artificial one, the keepers generally limited their treatment to an attempt to restore them to more healthy influences. They were released from their stall, allowed to breathe fresh air, their slop removed, and its place supplied by meal, hay, and bran mashes. Bedding was placed under them, thus alleviating their exit from the world. The change from their heated stable to a cooler atmosphere not unfrequently aggravated the disease.

Your committee made post-mortem examinations of a number of these animals, and found always the same pathological changes. The animals were some of them long residents in

these stables, which was known by their hoofs; others apparently more recent comers. The skin was lustrous like the coat of a highly groomed horse, and the animals appeared well conditioned. On opening them, but little flesh was found to be upon them, their bloated state being the cause of their apparent good order. Scarcely a pound of fat could be found. The omentum, which in milch cows would generally vary from 20 to 25 pounds, in these animals would not weigh a pound. This was universally the case as far as we have seen, and it is reported to be always so in distillery fed animals. The stomach and intestines, as far as examined, were healthy.

On opening the thorax, the whole cavity sometimes was filled with coagulable lymph and serum, but generally only one chest was thus affected. In several instances, the coagulable lymph and the serum appeared thrown out in layers, the first forming as it were a sponge, which was fully absorbed with the serum. The quantity of lymph was so great, that it was at first taken for fat—a mistake which the similarity in color contributed in making. There were frequently many gallons of this effusion. In some instances the pleura pulmonalis was closely attached to the pleura costalis by strong and recent adhesions. In every instance, combined with the pleuritis, was an active inflammation of the cellular tissue of the lung itself, affecting sometimes one and sometimes both, to greater or less extent. This was seen in various stages; one lung frequently exhibiting all the phenomena of pneumonia remarkably distinct, from the simple inflammation of a single lobe, to a general hepatization of the lung, so that it would sink entire in water; or still further, in the state of soft degeneration. One of these lungs is reported to have weighed 42 lbs. Save in one, single, doubtful instance, there was seen no trace of tubercle. As far as your committee could gather from those who are habitually employed in opening the dead animals, and turning them to the best possible use, tubercular deposits are not common, though they are occasionally seen. Their statement is of but little value, as it is doubtful if they know what is meant by tubercle.

Some, possibly trivial, facts in the appearance of these animals have struck the attention of your committee, namely,

1st. The extreme brilliancy and unnatural wildness of the eye (which appearance alternates with the "besotted and staring" expression before mentioned), and the general lethargy of the body, and apparent absence of fear and anger.

2d. The unpleasant smell of the breath, generally so sweet and agreeable, now reminding one of an old beer-bottle.

3d. The immense quantity of urine, and small quantity of fæces evacuated daily,—the colorless appearance of the urine, and the want of consistency in the fæces, being softer than the dung of grass fed animals.

4th. The manner in which the urine and fæces are discharged, standing in awkward positions, not unfrequently while reclining, and the urine not flowing in a continuous stream, as is natural with this animal, but *per saltum*, by jets. The quantity of the urine may be imagined when informed that thirty-two gallons of slop is the daily allowance for each cow, and that ten quarts of milk per day is a large average yield.

5th. They are very rarely seen chewing the cud. This arises from their food not requiring mastication.

6th. Their difficulty in breathing during the heats of summer—constantly panting as if they had been hard driven.

Reasoning *à priori* in regard to the whole matter, considering the facts, that several thousand cows are kept confined in a small space, deprived of all exercise—some hundreds under one roof but a few feet above their heads, in summer, heated to an intensity almost suffocating by the direct rays of the sun, by the steam from the boiling slop, by their own breath, and the exhalations from their bodies, constantly damp from the vapor arising from their food, and the floors wet with the ever flowing urine, standing and lying on hard boards, without litter by day or night; fed on food, if not injurious in itself, certainly ill adapted to the formation of their stomachs, which need not possess so complicated an apparatus as the rumen, reticulum, and omasum, when the latter could easily fulfil all the duties required to digest this species of food—one would most surely arrive at the conclusion that these animals could not give natural and healthy milk.

Your committee, having taken the best means in their

power to examine into this matter, now present to you the following results.

In examining this subject your committee have been, in a great measure, compelled to make the road themselves, for no track was found opened before them. There has been no report seen of any European investigations of diseased milk. The treatise by Robert M. Hartley, Esq., of this city, a work of great merit, was written to sustain an opinion; and like all treatises on new topics, contains errors either arising from limited or hasty investigations, or from unscientific deductions drawn from correct data.

Your committee have endeavored to take nothing for granted, but have striven to verify by repeated observations, the truth or falsity of every statement, and endeavored to guard against any fraud. For this reason, every specimen of milk examined, has been personally obtained by the chairman of this committee, from the milkers themselves, and placed in the hands of the chemist. Any adulterations and additions have been made, therefore, by the producers themselves, and are not attributable to any of the retail venders. The distillery milk has all been obtained from Johnson's Distillery, Sixteenth Street and Tenth Avenue. The Orange County milk was bought at the depôt, at the foot of Duane Street, without the knowledge of the proprietors of the object for which it was procured, and taken from the same can from which other customers were served. It, therefore, was not enriched with additional cream for the purpose.

"The purity and richness of milk," says a recent standard writer,* "were formerly estimated by its specific gravity, which is about 1.032; if the milk was diluted with water, it was supposed that the gravity of the fluid would be in the first case increased, and in the second lessened.

"The cream being the lightest element of the milk, its deficiency or abstraction would, of course, increase the density of the remaining fluid; and the addition of water, after the removal of the cream, which is also of less weight than milk which is even pure and rich, would of course raise the

* Arthur Hill Hassall.

gravity of the milk either up to, or beyond its natural weight." This method of analysis has, therefore, been rejected.

The chemical examinations were intrusted to Mr. Lawrence Reid, whose skill as an analytical chemist is well known to the members of the Academy. He has devoted much time and attention to the investigation, proposing and using new tests of its virtues, some of which will be hereafter mentioned, and displaying that zeal in the cause of science, which strongly recommends him to the favorable consideration and thanks of the Academy.

For the microscopical investigations, the Academy is indebted to the practised eye and sound judgment of Dr. Alonzo Clark, Professor of Pathology in the College of Physicians and Surgeons, in this city. For his readiness in so materially assisting in this investigation, Dr. Clark will undoubtedly receive the acknowledgments of the Academy, as he has already the personal thanks of the committee.

The reports of these gentlemen now follow in full.

NEW YORK HOSPITAL, *Nov. 29th, 1847.*

SIR :—At the request of the committee of the Academy of Medicine on milk, I have made several analyses of distillery and other milks, and have the honor to report :

1st. That of the various samples furnished me, none of the common sophistications were present, such as starch or carbonate of lime, and that as far as chemical tests could enable me to determine, the samples were all genuine.

2d. That with the exception of the sample marked No. 6 in the analysis they were all of a neutral character when received, No. 6 being acid.

3d. With regard to the assertion that distillery milk contains spirits, the milk has been tested on such a scale as to detect one fifty thousandth part of spirits if present, and none could be found.

4th. With regard to distillery milk furnishing no butter, it is a mistake, as every sample, sixteen, gave butter on agitation in a bottle. The butter is whiter and in much smaller quantity than obtained from other milk, and this may be considered a good test of distillery milk, the scantiness of the

butter. The butter also, in forming, associates itself with more curd and whey than that obtained from other milk. To examine milk for butter, a bottle containing a pint may be filled two thirds with milk, and well shaken for about one hour and a half, when the butter will separate.

5th. With regard to the relative proportions in which the ingredients exist. The nature of fermentation and distillation is to abstract from the grain all the fecula and sugar, the principles that are more particularly convertible into butter and sugar; leaving the nitrogenized compounds and also the caseine and earthy matter nearly untouched; hence the increased quantity of ashes and also of caseine, the nitrogenized compound in milk; while the sugar and butter are below the usual standard.

6th. To test if this milk was decomposed by heat in the same manner and time as other milk, a portion was placed in a glass vessel and retained at the temperature of 98 degrees of heat for six hours before coagulation took place, while a portion of Orange County milk treated in the same manner coagulated in one hour.

Whether this experiment is to be considered as having a bearing on the assimilation of the milk as food in the human stomach, I prefer leaving to the committee to decide.

The samples are marked from one to six. No. 1 is a European analysis of milk by M. Haidlen, the most recent I could find. No. 2 is Orange County milk, being an average of two samples. Nos. 3, 4, 5, 6, are distillery milk, about sixteen samples of which were examined.

Yours respectfully,

LAWRENCE REID,

Prof. of Chemistry to College of Pharmacy.

A. K. GARDNER, M. D.,

*Chairman of Committee of the Academy of
Medicine on Nuisances.*

ANALYSIS OF MILK.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
Water, - - -	873.00	860.00	869.10	876.00	888.00	898.00
Butter, - - -	30.00	35.00	15.00	14.00	13.00	10.00
Caseine, - - -	48.20	45.00	62.00	59.00	50.00	45.00
Sugar of Milk, -	43.90	53.00	44.00	42.00	41.00	40.00
Phosphate of Lime, -	2.31	3.35	4.20	4.00	3.20	2.80
" Magnesia,	.42	.76	1.84	1.56	1.41	1.20
" Iron,	.07	.09	.12	.11	.10	.07
Chloride of Potassium,	1.44	2.00	2.97	2.51	2.46	2.23
" Sodium,	.24	.36	.44	.42	.43	.40
Soda in combination } with the caseine, }	.42	.50	.43	.40	.40	.30
	1000.	1000.	1000.	1000.	1000.	1000.

DEAR DOCTOR :—I have examined, with the aid of the microscope, the four specimens of milk you sent me. Four statements will comprise all that I observe in them worthy of remark :

1st. The milk-globules are less abundant in them than in specimens of good country milk, with which they have been compared.

2d. The globules, though very variable in size, are generally smaller than in good milk.

3d. In three of the specimens there was an unusual tendency to aggregation in the globules, and when once aggregated they adhered in groups, so that mere agitation would not separate them.

4th. In the last two specimens there was an unusual number of epithelial cells,* many of which were very markedly granular, and some highly colored—in a few of these the milk-

* "The cells covering the simple membranes that form the free surfaces of the body, whether external or internal, are all entitled to be regarded as *secreting* cells; since they separate from the blood various products which are not again to be returned to it." (Carpenter's "Manual of Physiology," p. 408.)

"From the researches of Mr. Goodsir, it appears that in common with other glandular structures, the inner surface of the milk-follicles is covered with epithelial cells, which being seen to contain milk-globules, may be without doubt regarded as the real agents in the secreting process." (Carpenter's Physiology, Clymer's ed., 1847. P. 649—see also "Anat. and Path. Obs.," by John and Harry D. S. Goodsir, p. 24.)

globules were still imprisoned, and of very small size ; showing that these secreting structures had been discharged from the lactiferous ducts of which they form the lining, before the complete elaboration of their contents.

Your familiarity with the subject to which these statements relate, will render any comment on my part unnecessary. I submit them, therefore, as the basis of any remark which your wider range of research may justify.

Your ob't servant,

A. CLARK.

New York, Nov. 27, 1847.

To Dr. Gardner.

There are some persons who have attempted to deny that the health of the animal, or the food taken, can possibly affect the milk. The statement is so easily proved to be erroneous, that your committee would not think of noticing it, were it not urged so strenuously, that they feel compelled to give it a passing remark.

It is a settled fact that many articles taken as food or medicine, into the stomach, have been detected in the milk a few moments after. The coloring matter of madder root, the odorous qualities of garlic and turpentine, neutral salts, nitrate of potassa, have all been found in the milk of women ;* the color and smell of carrots in the milk of an ass.† Cow's milk is well known to be so sensibly affected by carrots, turnips, onions, cabbages, as to be perceptible to the taste. It frequently possesses a bitter principle, when the animal has been grazing among young birch or other trees. That the properties, as well as the smell of various substances, are preserved, is evident from the common custom of purging the child by giving castor-oil to the mother.

Every medical man knows that the lips of children nursed by a woman affected with syphilis, are frequently rendered

* Microscopic Anatomy of the Human Body, by Arthur Hassall, London, 1846.

† Experiments of Pélignot, "Cours de Microscopie," by Al. Donné, p. 454. Paris, 1844.

sore, and the whole constitution tainted with this loathsome malady. Yet Mons. Donné states that he has never been able to detect any change in the character of the milk in such cases. This instance is not a solitary one, for we all know that children are born affected with syphilis inherited from the father; the poison thus passing through the systems of both parents, the child being diseased and the mother escaping free.

Numerous statements have been made orally and written, by men of science and veracity, testifying to the marked effects of the slop-fed milk upon children, and the cessation of all disturbance and the restoration to health, immediately upon discontinuing the milk; and numerous deaths, which under the head of Marasmus swell the lists of mortality, are ascribed in great measure to this cause.

The common opinion is, that the milk is injurious. The keepers of the cows, the ignorant stable boys (who are composed of the most stupid Irish and Germans to be found), and the residents in the neighborhood, will not confess the use, or their willingness to drink this milk. One man who is employed upon these animals when dead, says, "no money would tempt him to drink the milk constantly, for cows that have such insides cannot give healthy milk."

The chemical and microscopic reports both show, that the milk of animals fed on distillery slop is far weaker than the Orange County, the proportions of their constituents varying, but in some being as one to three. In 1000 parts of Orange County milk, 35 were butter; while of 1000 parts of distillery milk, there were found but 15, 14, 13, and even 10 parts only of butter.

The original test of Mr. Reid, to discover the time necessary for coagulation, has evinced a most important fact, that the distillery milk will not coagulate in less than six hours, while pure milk, under the same influences, coagulates in one hour. This, with the observation of Dr. Clark, showing the peculiar tendency of the milk globules to conglomeration and the tenacity with which they adhere, appears to the committee a most important matter. This alone may serve to

account for the whole disturbance caused to the system of the child fed on this nutriment.

When the milk enters the human stomach its first change is coagulation, the second assimilation. If, therefore, a quantity of milk should refuse to coagulate, it remains as an indigestible substance in the stomach; and we should suppose would produce the effects usual to children when their stomachs are loaded with improper food,—produce convulsions, vomiting, and purging.

The deduction from the fourth head of Dr. Clark's report is perhaps as important, but less obvious. From the increased color of the epithelial cells, which may be ascribed to a diseased condition, and other peculiarities mentioned, we can suppose an unnatural state, perhaps caused by over-stimulation.

Such as we have mentioned are the condition of the animals and their appearance when dead, the *à priori* deductions, and the microscopic and chemical analyses. The question now arises, what are the real effects produced by the milk. The answer to this question is highly important. What is it?

About the year 1840, at the solicitation of R. M. Hartley, Esq., the following statement was signed by fifty-eight medical gentlemen of New York, including in the list many of the most distinguished in the profession, and among them, the president and vice-presidents of this Academy. "The undersigned, physicians of the city of New York, being requested to express our opinion in relation to the milk of cows fed chiefly on distillery slop, have no hesitation in stating that they believe such milk to be extremely detrimental to the health, especially of young children, as it not only contains too little nutriment for the purposes of food, but appears to possess unhealthy and injurious properties, owing in part, probably, to the confinement of the cows, and the bad air which they consequently have to breathe, as well as the unnatural and pernicious nature of the slop on which they are fed."

Prof. Charles A. Lee, formerly professor of *Materia Medica* in the University of New York, states the effects as follow:—"Children who are fed with 'still-slop-milk' have a pale, cachectic appearance, are extremely subject to scrofula, and

are liable to take every epidemic disease prevalent. To scarlet-fever, measles, hooping-cough, they are particularly subject, and will take them upon the slightest exposure; such children being apt to sink under any serious disease with which they may be attacked. There is a laxity of the solids and a vitiated condition of the fluids, which predispose them to disease in its most malignant form, &c."

Again he says, "I could give you any number of cases where the health of children has been utterly destroyed by the use of still-slop milk; and I could convince you that the *cholera infantum* itself, the great scourge of our city, is in fact chiefly caused by the use of this milk, either by the mother or child; for it is a singular fact, that in the large cities of Europe, where other causes of disease, with the exception of this, are as prevalent as in New York, this disease is absolutely unknown. Hence the efficacy of a removal to the country; as a change of diet is the necessary consequence."

Dr. Alex. H. Stevens, Prof. of the New York College of Physicians and Surgeons, states of a child about eighteen months old, who while a resident in his family was in perfect health, on moving to a hotel, was constantly affected with uncontrollable vomiting. The milk being suspected to be the cause, it was thenceforward sent from the Dr.'s family, when the complaint entirely ceased, and was renewed only with a renewal of the milk from the hotel, and this occurring so repeatedly as to leave no doubt of the cause.

Dr. W. N. Blakeman's child was afflicted with obstinate vomiting and purging, great loss of flesh, and extreme emaciation. Nothing gave relief. It was seen by many physicians, among them Dr. Dering, formerly Registrar of the New York College of Physicians and Surgeons, Dr. Beck, professor in the same institution, and many others. On discovering that the milk on which the child was fed, was from distillery slop-fed cows, it was changed, and the child was soon completely renovated, leaving no doubt in the minds of any of the physicians that the impure milk was the cause.

Dr. Cyrus Weeks had an infant child brought up by hand, fed for a single day on slop milk; a diarrhœa would commence,

which was speedily cured by omitting the food. This experiment was repeatedly tried, and with uniform results.

Dr. Trudeau gives the case of a child with protracted and severe diarrhœa, which was nourished upon milk alone. A change of diet entirely removed all bad symptoms in a few days' time. He states: "I am satisfied that distillery milk has done a deal of harm, and that the increased ratio of mortality among the children within a few years has no other cause."

These instances are, doubtless, similar to those in the experience of many. They seem to show conclusively, the deleterious qualities hidden in milk, produced in this unnatural manner.

Your committee, having expressed calmly and deliberately their opinions, do present for the consideration of the Academy the following resolutions.

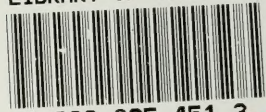
Resolved, That, in the opinion of this Academy, the milk of cows shut up in stables and fed on distillery slops, is not only less nutritious than that of unconfined and well-fed animals, but is positively deleterious, especially to young children, and is a fruitful cause of many fatal diseases.

Resolved, That the Academy deems it proper to make known to the public authorities the existence of this evil, to the end that they may take such action in the premises as in their wisdom they may think fit.

All of which is respectfully submitted.

AUGUSTUS K. GARDNER, *Chairman.*

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